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μSR Studies on the Magnetic Kondo Compounds $CeNi_{1-x}Cu_x$

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μSR spectroscopy was carried out down to 0.1K for three polycrystalline samples: $CeNi_{0.8}Cu_{0.2}$, $La_{0.25}Ce_{0.75}Ni_{0.8}Cu_{0.2}$ and $CeNi_{0.4}Cu_{0.6}$. The initial formation of a spin-glass-like state (SGS) [1] was verified for all three materials. This state is not a normal spin frozen state but rather a dynamic short-range ordered (SRO) random spin system. It shows field hysteretic behaviour. The presence of strong magnetic inhomogeneities agree with the μSR data and a spin cluster system is a likely choice. The μSR data indicates that all the inhomogeneities must occur on the local μSR scale. At lower temperatures, below 1K, the μSR spectra are compatible with long-range magnetic order but require indeed spin disorder in the local scale. From the μSR point of view, the magnetic states of $CeNi_{0.8}Cu_{0.2}$ and $CeNi_{0.4}Cu_{0.6}$ are quite similar and not a simple FM spin arrangement. In addition, μSR in external fields indicates that fields on the order of 250G are not shielded by the sample and that saturation magnetization must be weak. In the La-based compound, the μSR data reveal the same characteristics but with smaller transition temperatures, as expected for magnetic dilutions.

[1] J. García Soldevilla et al., Phys. Rev. B, **61** (2000) 6821.